<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Responding to urban pollution in Asia - the metropolitan improvement program (MEIP) and the challenge of air and water quality management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Author(s)</strong></td>
<td>Stern, Stephen R</td>
</tr>
<tr>
<td><strong>Date</strong></td>
<td>1994</td>
</tr>
<tr>
<td><strong>URL</strong></td>
<td><a href="http://hdl.handle.net/10220/2640">http://hdl.handle.net/10220/2640</a></td>
</tr>
<tr>
<td><strong>Rights</strong></td>
<td></td>
</tr>
</tbody>
</table>
Responding to Urban Pollution in Asia -
The Metropolitan Improvement Program (MEIP)
and the Challenge of Air and Water Quality Management

By

Stephen R Stern
Responding to Urban Pollution in Asia
The Metropolitan Environment Improvement Program (MEIP) and the Challenge of Air and Water Quality Management

Inadequacy of Traditional Sectoral Development Strategies

The UNDP-assisted, World Bank-executed Metropolitan Environmental Improvement Program (MEIP) was initiated in 1989 to help Asian urban areas tackle their rapidly growing environmental problems. During 1990, a MEIP central office was established at the World Bank, five national governments endorsed the program, and Phase One work programs began in five cities — Beijing, Bombay, Colombo, Jakarta, and Metro Manila. MEIP's Phase Two began in early 1993, MEIP became a cooperating within the UNDP Urban Management Program for Asia and the Pacific (UMPAP), and in mid-year, Kathmandu became the sixth MEIP city in mid-1993.

MEIP was born of a recognition that the powerful forces of urban economic development both provide the opportunity to enhance the lives of people in Asian cities and contain the potential to degrade the living environment on which these cities dwellers depend. Traditional sectoral development strategies and projects are by themselves inadequate for addressing environmental deterioration or the linkage between industrial and urban development.

Focus: Impacts on Air, Water, Land, and People

MEIP approaches its work from a spatial and environmental media perspective. Metropolitan regions are looked at as spatial systems in which development activities need to be planned, implemented, and monitored with focus on their impact across the region's air, water, and land.

MEIP recognizes that a broad region-wide perspective is needed for the analysis of natural systems, for economic and regulatory policies and planning, and for major infrastructure investments to resolve some environmental problems. Yet at the same time, innovations are needed at the community and individual enterprise level to address micro-problems in a more dynamic and efficient way, build local networks to strengthen knowledge on environmental issues, and bring pressure to bear on decision-makers.

ENVIRONMENTAL IMPACTS: LESSONS FROM THE WORLD BANK (ASTEN) "TOWARD AN ENVIRONMENTAL STRATEGIES FOR ASIA"

A great deal of light is shed on the Asian urban environmental conditions that MEIP addresses by a 1993 World Bank environmental issues study, "Toward an Environmental Strategy for Asia". The study was produced within the Asia Technical Department Environment and Natural Resources Division (ASTEN — ASTEN's MEIP unit is the central office for MEIP activities). The study's authors, Carter Brandon and Ramesh Ramankutty, depict the nature and magnitude of environmental problems in Asia, and explore technical and policy approaches to solving these problems. Before turning to the MEIP framework, and illustrative MEIP efforts at urban air quality management, it is useful to examine the issues of air and water from the perspective of the ASTEN study.
Growth of Cities
By 2025, as many people will be living in Asian cities as there are in all of Asia today. Of these projected 4.3 billion people, nearly 2.5 billion are expected to live in urban areas. In East Asia, the urban population is projected to exceed the rural population by 2005, and by 2025 about 1.5 billion people (63 percent of the total population) will be living in urban areas. In South Asia, the urban population is also expected to exceed the rural population by 2025, when more than 1 billion people will be living in cities. There is, therefore, a dramatic demographic shift taking place in Asia, as the urban population is expected to triple between 1990 and 2025.

The number of large cities is also growing rapidly in both East and South Asia. Currently, fifty-six cities in East Asia have more than 1 million inhabitants (thirty-eight of them in China), while in South Asia thirty-one cities have more than 1 million people (twenty-three of them in India). Six cities in East Asia and three cities in South Asia are megalopolises with more than 8 million people. Not only is the number of large cities increasing, the rate at which smaller cities are becoming larger is also increasing.

To date, cities have had a lower incidence of poverty than rural areas, but with rapid urbanization, increasing numbers of the poor will be found in the cities and towns of Asia. For example, in India there is evidence that the incidence of rural and urban poverty is converging. The poor form a significant portion of the population in some of the largest cities—60 percent in Calcutta and Jakarta, 45 percent in Karachi and Madras, and 35 percent in Manila. The poor who live in squatter settlements close to waste dumps and industrial sites, and put up with overcrowding, lack of potable water and sanitation facilities, disproportionately bear the impact of environmental degradation.

Key Environmental Problems
Given high population densities, high incomes, and large industrial concentrations, cities have serious environmental problems. Infrastructure and service needs are unable to keep pace with the rapid growth in urban population. The total pollution load from the different sectors in urban areas exceeds the capacity of local governments to collect and dispose of municipal sewage and solid wastes and to control toxic wastes and emissions. This concentration of wastes overwhelms the assimilative capacity of natural ecosystems, leading to environmental degradation. Because discharges of pollutants in urban areas are spatially concentrated, they are potentially more dangerous to human health.

Water Pollution
Probably the most pervasive environmental problem in Asia is water pollution, and cities cause most of it. Water pollution is responsible for substantial mortality, particularly among children. United Nations GEMS data show that levels of fecal coliform (500 per 100 milliliters) in Asian rivers far exceed the maximum recommended for potable supplies (10 per 100 milliliters) and even the maximum that defines surface water as polluted (100 per 100 milliliters). Given the lack of adequate water supply alternatives, surface water pollution is a major health threat to those who use surface water for consumption. The median level of dissolved mercury at the sampling sites (0.2 micrograms per liter) also far exceeds the recommended standard of 0.001 micrograms per liter. Fish and shellfish absorb substantial amounts of waterborne mercury, which humans then consume.

Water pollution in Asian cities is largely caused by untreated domestic sewage. For example, in Metro Manila, about 65 percent of water pollution is from domestic waste; and in Bangkok, about 75 percent of pollution in the lower part of the Chao Phraya River comes from domestic waste.
Industrial effluents, which present difficult and expensive regulatory problems compound domestic sewage pollution, but are, by volume, significantly less.

Governments have intentionally focused more on water supply than on sanitation or sewage treatment. Official data in Asia indicate that average urban access to safe drinking water is 82 percent of the population, and that 77 percent has access to some form of sanitation facilities, generally onsite disposal of human and solid waste. These sanitation facilities, however, are often poorly constructed and badly maintained. Liquid wastes overflow into open drains, spreading polluted water. Flooding during the rainy season spreads sewage into residential neighborhoods. Finally, where sanitation and sewerage has received high priority (usually the more affluent neighborhoods), sewage treatment is very limited or nonexistent and the wastewater is dumped untreated into rivers and streams.

Many Asian cities are located in coastal areas, and excessive withdrawal of groundwater has, in some cases, resulted in salt water intrusion, making the groundwater unfit for consumption. This problem is acute in Bangkok, Jakarta, Madras and Manila. In Bangkok and elsewhere, surface water pollution has forced public utilities to extend water lines to more distant sources, or treat water from increasingly polluted sources. In Shanghai, pollution forced water intakes to be moved upstream more than 40 kilometers at a cost of about $200 million; in Jakarta, investments exceeding $1 billion are required to bring in water from more distant watersheds.

The impacts of water pollution are especially telling on the poor. Where access to safe drinking water is limited, polluted water is consumed by the urban poor, who have little alternative other than to pay exorbitant prices to purchase water from private vendors. In Manila, diarrhea in shanty towns is twice as common as in the rest of the city. Studies in Calcutta and Delhi show higher rates of disease in many slum areas and longer duration per illness.

Air Pollution

WHO data show that twelve of the fifteen cities with the highest levels of particulate matter, and six of the fifteen cities with the highest levels of sulfur dioxide are in Asia. Overall, of the seven cities worldwide that received the worst ranking for air pollution in 1988, five are in Asia: Beijing, Calcutta, Jakarta, New Delhi, and Shenyang.

Air quality is worsening in virtually all Asian cities, except perhaps in Korea. (Elsewhere in the world, middle-income cities are showing broader improvements.) Data from GEMS air pollution monitoring provides evidence that ambient concentration of suspended particulate matter (SPM) is worsening in every city monitored, and generally exceed WHO guidelines. However, the cases of lead, SO₂ and NOₓ emissions are not as uniform. Lead emissions are improving in Kuala Lumpur, following the introduction of unleaded fuel. The trends for SO₂ differ by city, but are getting worse in most Chinese and Indian cities and staying steady or improving slightly in some of East Asian middle-income cities. NOₓ concentrations are still generally below WHO guidelines, but levels of CO exceed WHO guidelines in urban areas with heavy traffic.

With few exceptions, motor vehicles are the major cause of air pollution in Asian cities. Vehicle populations have been growing exponentially throughout Asia, doubling every seven years. Beyond the number of motor vehicles, however, vehicle characteristics also aggravate pollution. Domestically manufactured motor vehicles, especially in India and China, have performance and emission characteristics of 1950-60 vintage vehicles and lack pollution controls. Owing to the high cost of vehicle ownership, scrappage rates are low, resulting in a vehicle fleet that is of old and often poorly maintained. The concentration of motorcycles is not only higher than in other areas of the world, it is
generally much greater than the rest of the four-wheel vehicle population. Many motorcycles are powered by old design two-stroke engines that emit up to ten times more hydrocarbons and smoke per kilometer than do the four-stroke engines of cars and trucks. In addition, diesel vehicles in Asia account for a greater proportion of the vehicle population and total kilometers driven than in other regions of the world. Further, some of the fuels used are among the dirtiest in the world, especially with regard to sulphur in diesel and lead in gasoline.

Insufficient urban road space and ineffective traffic management cause traffic congestion. Cities such as Bangkok and Jakarta have massive traffic jams that delay commuters by hours: peak-hour speed in Asian cities averages around 16 kilometers per hour. Few cities have made serious efforts to reduce congestion and have accepted it as a way of life. Besides being costly in terms of time lost and the drag on commerce, stationary vehicles sitting in traffic contribute significant incremental air pollution.

Industry is the next major source of gaseous emissions. Although large industrial plants discharge many times the emissions of individual small plants, clusters of small-scale plants operating obsolete equipment, and under little regulation, can also be significant polluters.

Finally, in some cities domestic heating/cooking is a major contributor to air pollution. For example, coal smoke from home and commercial heating is the main air quality problem in Beijing and other Chinese cities. In New Delhi, the residential sector is the largest source of SO$_2$ (46 percent) and NO$_x$ (37 percent) and contributes a significant share of CO (33 percent) and SPM (18 percent). Dust, especially from eroded areas, quarries, cement plants, and unprotected building sites, adds to the urban air pollution problem.

Air pollution causes considerable suffering, and, unlike water pollution, affects all residents. Lung cancer mortality is four to seven times higher in Chinese cities than in the nation as a whole. Sixty percent of Calcutta residents suffer from respiratory diseases, compared to the national average of 2.5 percent. A 1990 US Agency for International Development (USAID) study in Bangkok estimated that SPM causes up to 1,400 deaths per year, and that lead pollution causes 200,000–500,000 cases of hypertension, 300–900 cases of heart attack and stroke, and 200–400 deaths per year. The long-term effects of lead poisoning on Bangkok children include 400,000–700,000 total IQ points lost per year—3.5 IQ points per child through age seven.

Costs

The total cost to the Asian economies of urban environmental degradation has not been calculated. However some estimates have been made for selected environmental problems. For example, in India, waterborne diseases cause loss of 73 million work days per year, valued at $428 million per year. Rough calculations show that the environmental costs due to air pollution in Bangkok could be $1 billion to $3 billion per year. Environmental costs in Asia’s other megacities are equally significant.

It should be noted that these and other estimates of the cost of urban environmental degradation are controversial, because in order to reflect costs in monetary terms it is necessary to place economic values on human sickness and death. These estimates are most appropriate when used to compare benefits and costs of alternatives within cities and countries. They are much less appropriate for comparing costs and benefits across countries.

Tackling Key Environmental Problems
Managing urban development in an environmentally sound way is extremely complex because of the cross-sectoral and cross-jurisdictional nature of the urban economy. Urban infrastructure and service provision encompasses transport, communications, industry, energy, shelter, zoning, water supply and sanitation, flood control and drainage, solid waste, education, health, and recreation. The spatial planning, pricing, service levels, and management of all of these aspects of urban management may impact on the environment. As a result, environmental concerns should be integrated into many urban planning and management decisions. As always, the choice of action will depend on the economic, social, and geographic characteristics of the specific metropolitan area.

In general, there are four environmental problems that need to be addressed in Asian cities: water pollution, air pollution, solid waste management, and inappropriate land use. Water and air pollution are addressed below.

**Water Pollution**

The health and welfare impacts of water pollution have to be tackled on two fronts: provision of safe water to urban populations and reduction of water resource pollution.

**Provision of Safe Water**

Assuring the provision of potable water to the growing populations of Asian cities has been an urban sector goal for decades, and environmental concerns enhance rather than diminish this goal. The basic technologies for water supply systems are well known in the region and reasonably efficient. However, action is required in service mix and cost recovery, water conservation, demand management, and regulatory and delivery institutions. In most Asian countries, consumers pay a fraction of recurrent and capital costs of urban water supply. This prevents water authorities from recovering financial resources necessary for maintenance and capacity expansion.

Pricing water to reflect the cost of providing it would serve both development and environmental objectives. Cleaning up water supplies, as well as expanding services to rapidly growing urban and industrial consumers, requires high levels of both investment and operating capital. Financially strong water agencies/utilities would be better equipped to provide better services to an expanding population with increasing needs. Affordability studies indicate that the vast majority of the urban population (including the poor) would be willing to pay more if service were provided to meet their needs. If complete cost recovery were possible from most consumers, then it would also become possible to subsidize services to the poorest communities through cross-subsidies.

One approach to minimizing future capital expenditures is through conservation, which is less expensive and more environmentally sound than new investment. To the extent water can be conserved — and little work has been done in this area — a corresponding amount of new investment can be postponed. More effective maintenance can help overcome the problems of leaks and pilferage. Recycling water in the industrial sector can provide water to firms at a fraction of the investments needed to supply clean water. Demand management can be achieved through both financial incentives (such as higher prices for both water supply and fees to firms for discharging industrial wastewater) and technological intervention (through, for example, installing new toilet fixtures). It is also important to look at the demand for water in other sectors. For example, irrigation is the largest use of water in Asia. Increasing the efficiency of irrigation can release water for growing industrial and domestic demand.

**Reduction of Water Pollution**
As stated above, even though domestic sewage is the main cause of water pollution in Asian cities, treatment and disposal of sewage is given lower priority than the provision of clean water. Most governments refrain from providing waterborne sewage collection and treatment systems due to the prohibitive investment costs to overcome the enormous initial deficit of infrastructure. However, piped sewer systems (costs ranging from $300 to $1000 per household, not including the cost of sewage treatment facilities) appear to be the only viable option for the high-density cores of cities. Elsewhere, there is room for application of alternative technologies that could make a significant difference. These include alternative low-cost sanitation options such as condominial sewer systems, pour-flush latrines, or small-bore sewers.

Sewerage tariff reform — whether combined with water supply tariffs or applied separately — is needed to expand investment. Assuming adequate revenues through tariff reform, investment can be both public and private. Malaysia, for example, is encouraging the privatization of 43 municipal sewage systems. Community groups can also play an effective role in the distribution of water and the organization of sanitation systems in poor settlements. Such efforts are already beginning in Asia.

**Transportation and Air Pollution**

There are two basic approaches to reducing vehicle pollution: reducing emissions per vehicle mile traveled and reducing the total number of vehicle miles traveled. In theory, an emission tax is the most efficient means to reduce pollution, as it would provide consumers with incentives to choose the least-cost options across these two approaches. However, such a tax would be weighed down by need for effective emission monitoring, which is difficult. More common are strategies to reduce both emissions and congestion, using a mixed set of instruments, including taxes on fuels, vehicles, and parking, incentives and regulations affecting vehicles; and traffic management and the provision of public transport alternatives.

Specifically, there are a number of ways to meet the first objective of reducing emissions per vehicle mile traveled: (a) enforcing higher maintenance standards on existing vehicles, in order to keep emissions closer to the design standards of the vehicles; (b) introducing vehicles designed to meet new emission standards; (c) introducing unleaded fuels (with or without catalytic converters) for the rapid reduction of atmospheric lead; and (d) retrofitting motor vehicles to use other kinds of fuel modifications or fuels, such as liquefied petroleum gas (LPG). Thailand successfully shifted the fuel of three-wheel taxis from a mixture of gas and fuel oil to LPG. Some of these measures to reduce emissions per vehicle are more cost-effective than others depending on the characteristics of the city under consideration. A strategy for reducing emissions would begin with the least-cost measure, and slowly move up the marginal-cost curve to more costly measures.

The second objective is to reduce total vehicle miles traveled. This can be accomplished by either reducing the total demand for travel or altering the mix of vehicles used to carry travellers. The first option may be achieved in part by increasing the cost of travel, but urban travel demand is relatively inelastic. More important is improved spatial planning to reduce the total demand for travel.

Altering the mix of vehicles used to carry travellers require policies to move people away from the use of private automobiles towards other forms of transportation. Here, experience has shown that a two-prong approach is required. The first prong is to raise the cost of private vehicle use. Options include traffic management (for example, one-way systems, closing streets, downtown pedestrian zones, provision of exclusive bus lanes) and demand management (such as increased parking fees, road tolls, fuel taxes, and carpooling programs). The second prong is to provide alternatives to private automobiles, which can be in favor of either larger vehicles (vans, buses, or mass transit), or...
nonmotorized options, primarily bicycles. Without viable transit alternatives, the higher road user fees would lead to higher financial costs of travel with relatively little decrease in actual travel.

THE FRAMEWORK FOR MEIP ACTIVITIES

The above analysis of urban Asia from "Toward an Environmental Strategy for Asia" gives a comprehensive overview of the challenges and opportunities that MEIP encounters in its city and intercountry work programs. The MEIP work in each metropolitan region is guided by a Steering Committee composed mainly of representatives from central and local government agencies responsible for environmental quality, budgeting and finance, sectoral development, urban planning, and land use. Private sector and NGO representatives are also included. Working groups are formed to oversee the technical aspects of specific MEIP activities. The National Program Coordinator (NPC), a local environmental professional, forms a secretariat for the Steering Committee, and coordinates all MEIP activities. There are six core areas of MEIP work in each city:

- developing a regional Environmental Management Strategy (EMS) that provides the framework for activities by public sector agencies, the private sector, and NGOs and community groups;
- strengthening institutions concerned with environmental protection to work more effectively with economic policy planners and sectoral agencies;
- preparing high-priority investment projects;
- building a city-wide environmental network that links environmental management efforts of government to the private sector, NGOs, and adversely-affected low-income communities;
- assisting communities and private enterprises to prepare and implement local-level projects to improve waste and resource management; and
- facilitating information exchange within and across countries.

MEIP and The World Bank

The MEIP central office has a close relationship with the World Bank project investment divisions which encourages early identification and preparation of projects to respond to high priority pollution problems. Feasibility studies for pollution abatement investments, as well as development of the EMS, are linked to Bank environmental, urban, and industrial projects, as well as those of other donors. MEIP central office staff are involved with the design and supervision of those components of Bank projects through which MEIP activities are carried out.

The Environmental Network

Reliance on governments alone is insufficient for environmental quality management. NGOs, industry, and academia are represented in MEIP working groups and on some steering committees. A prime task of the NPC is to build an environmental network that brings together government officials, advocacy organizations, private sector representatives, media, and community groups.
Case studies, demonstration projects and workshops on environmental problems and pollution abatement techniques are carried out with local organizations and communities to build up their practical experience and to make them a full partner in the discussion and implementation of the EMS.

Most of the major Environmental Management Strategy and investment feasibility work has now produced interim reports or has been completed in the Phase One MEIP cities. Each NPC has organized in-country workshops and local level demonstration projects with government, private sector, NGO, and community participants from the MEIP-city environmental network.

Inter-country Cooperation and MEIP Air Quality Efforts
MEIP was conceived as an Asia regional program and sharing environmental management experience among, as well as within, the cities is an important aspect. This is facilitated through research on topics of common interest among the cities and exchanging experiences through regional initiatives and workshops. Air quality management has particularly lent itself in the MEIP context to intercountry cooperation. The potential of the MEIP framework for catalyzing metropolitan environmental networks to address environmental problems is explored below in the description of the MEIP process as it faces the task of urban air quality management.

The MEIP-Colombo Short Course and Clean Air 2000
The deteriorating quality of ambient air in Sri Lanka has focused policy makers and environmental action groups on the need for remedial measures and a comprehensive strategy for long-term air quality management. The air quality situation in the Colombo area and the nation can only worsen if there is no coherent plan of action. Assistance was sought through the MEIP technical network to introduce preventive measures that would forestall the need for expensive remedial actions in the future. This process encompasses increasing local capabilities with training and developing a management strategy to address air quality issues.

The five-day Short Course on Air Quality Management was the catalyzing activity under MEIP guidance. MEIP-Colombo organized an intensive training course for Sri Lankan environmental professionals to place their development in the context of lessons from other Asian cities and relevant international knowledge. The Short Course on Air Quality Management brought together the experience of two MEIP cities - Beijing and Bombay - along with regional and international presentations from Thailand, Japan, the United States, and the World Bank. The Short Course provided Sri Lankans air quality management options that led to the development and adoption of Clean Air 2000 - An Action Plan for Air Quality Management in the Colombo Metropolitan Area.

Participants in the Short Course included more than sixty representatives from Sri Lanka, all involved in the air pollution problem and its management. Attendees included representatives of the academic community, research laboratories, environmental regulatory agencies, urban development planners, administrators, public health officials, consultants, transportation planners, the police, local government officials, non-governmental organizations, meteorologists, industry representatives, and international organizations.

The international experts combined class room techniques with group sessions that covered topics including standard setting; monitoring techniques and instrumentation; modelling, prediction, and forecasting; regulatory and institutional arrangements; fuel pricing; pollution abatement and control; and policy initiatives.
Still, the course would have remained a learning process had it not been for a decision by the Government of Sri Lanka to commit itself to the development of an action plan to address potential air quality problems. The organizers felt that merely providing information to the participants, while being useful, would not channel this information into implementable ideas unless a concerted effort were made to transform the information into action. It was felt that the plan should not be formulated by the resource persons but should be developed by the Sri Lankan participants themselves.

The Course was to provide background information and practical experiences, which were to form the basis for the development of the action plan. The local participants would be most familiar with the situation in the Colombo Metropolis and more importantly, the constraints that would be faced during implementation. In addition, the participants would feel that a plan which they had developed would not be an external document thrust upon them. They would therefore be more inclined to participate in the implementation process.

Clean Air 200 would include the identification of issues, suggested actions, their level of priority, institutional arrangements, phasing, and costs. With these guidelines, a task force of Sri Lankans began drafting the first version of the action plan. Priority actions were compared with sectoral objectives in transport, energy, and industry enabling a determination of key milestones for implementation and achievement. This active process of learning led to intensive debate and consensus building at the workshop on the scope and shape of the actions. These deliberations were taken up by the Sri Lankan government decision-making process after the Short Course. After slightly more than half a year the Clean Air 2000 action plan became government policy for the Colombo Metropolitan Area and the first phases of implementation began.

Lessons the Short Course/Clean Air 200 Experience

A Locally Developed, Implementable Outcome
The formulation of the Clean Air 2000 Action Plan at the Short Course and its subsequent acceptance by the Government as air quality management policy were important achievements. The way in which this differed from the traditional, often externally driven, preparation of government plans was significant. The international participants provided important inputs, but the plan was entirely prepared by Sri Lankans through a process of cross-sectoral consultation. The sense of Sri Lankan ownership was very high. The time frames specified for implementation and institutional responsibility were adjusted to be integrated with sectoral development plans.

MEIP Intercountry Partnership
Bombay assisted with know-how on developing air quality monitoring and instrumentation techniques. Beijing demonstrated the application of a user-friendly computer model to the Sri Lankans. This was subsequently provided as a gift to MEIP-Colombo. The other MEIP cities, in turn, are benefitting from Colombo’s experience as they begin to formulate action plans under MEIP’s URBAIR.

Regional Sharing and International Collaboration
Bangkok, Thailand and Kitakyushu, Japan provided vivid examples to Colombo on the advantages of proactive planning. Bangkok has a rich experience in wrestling with its chronic vehicular air pollution problems, while Kitakyushu prides itself on advances made in controlling air pollution from industrial sources. The US example of practical steps toward air pollution reduction was of value to Sri Lankans and international experts alike.
High Value Output at Low-Cost
Six international development agencies funded the Short Course which was remarkably cost effective. For less than SUS50,000, a training course was conducted and Sri Lanka’s first ever Air Quality Management Action Plan was prepared.

Use of Economic Instruments
The experiences of other Asian cities demonstrated the benefits of economic instruments in reducing air pollution. Sri Lankan planners learned that simple adjustments in pricing and tariff structure can have significant impact on aspects such as vehicle maintenance and fuel-shift.

Investment Links to World Bank Projects
The Short Course established the need for a long-term air monitoring program which became an immediate priority in the action plan. This priority was thereafter included as a component in the World Bank IDA-financed Colombo Urban Transport Project. A three-year monitoring effort will cost SUS 550,000 and will provide equipment and expertise to the Government of Sri Lanka.

Phasing In Standards
The exposure to air quality standards across the region gave Sri Lankans insight into the comparative situations in Asian countries. A progressive, phasing in of stringency in standards was determined to be the most effective approach for improving urban air quality in the Colombo Metropolitan Area.

URBAIR
The Colombo Short Course enabled Sri Lankans to benefit from the air quality management experience of developing countries in Asia and from industrialized nations as well. But this process did more than provide Sri Lanka alone with a framework for maintaining and renewing air quality in greater Colombo. It helped shape an ongoing pattern of intercountry cooperation that can contribute to the restoration of breathable air in metropolitan areas throughout Asia.

Colombo reported on the Short Course and the development of its action plan at MEIP’s Third Intercountry Workshop held in Sri Lanka in December 1992. The Sri Lankan example was an inspiration for other MEIP cities. It is being utilized by Bombay, Jakarta, Kathmandu and Manila as they participate in MEIP’s Urban Air Quality Management Strategy in Asia (URBAIR) managed by World Bank Environmental Engineer, Jitendra Shah, who served as one of the resource persons to the Colombo Short Course.

The Manila delegation, for example, returned from the December 1992 MEIP meetings determined that an achievable, integrated, comprehensive action plan could be put in place without lengthy and expensive "preparatory" studies. Manila already had completed some important studies — notably on Vehicular Emission Control (Asian Development Bank), and The Epidemiology of Chronic Respiratory Diseases of Jeepney Drivers, Aircon Bus Drivers, and Commuters (World Health Organization). There was some existing data on ambient air quality and emissions and a number of specific air quality projects recommended by the studies.

MEIP-Manila participated in discussions with government officials and consultants in order to build on the sense of urgency felt about Metro Manila air pollution and find the political will to establish a framework for action. Meetings were held with all sectors concerned with air quality and in January 1993 a draft action plan was prepared. This draft plan is being developed into an implementable air quality management strategy as part of MEIP’s URBAIR process.
Phase One URBAIR efforts in all four MEIP cities have been primarily carried out with consultant trust fund support from the Dutch and Norwegian governments. Initiating URBAIR workshops were held in Jakarta and Bombay in April 1993, in Manila in July 1993 and in Kathmandu in December 1993. These initial city workshops were attended by representatives from government, industry, local research institutions, NGOs, and by international air quality experts.

At these first workshops, consultant teams from the Institute for Environment Studies (Netherlands) and the Norwegian Institute for Air Research presented generic guidebooks on preparing a comprehensive air quality management strategy. The current status of city air quality management was analyzed and discussed. Gaps in data on meteorological conditions, ambient pollution levels, and pollution sources and impacts were identified. Social and economic costs of allowing present trends to continue were discussed in comparison with the costs of cleanup. Needed monitoring capacity and the capability of local institutions to manage air quality were examined.

The initiating workshops established a work plan for international consultants and local working groups to turn the guidebook into a framework for air quality action specific to the city. City-led working groups on air quality assessment, economic costs and benefits, and policy issues were established to conduct each city’s work program. The city-specific guidebooks these teams create will be presented for development into the action plan for air quality management at a second city workshop which concludes URBAIR’s first phase.

Stephen Stern
April 1994
Stephen R. Stern

Stephen Stern is a communications and intercountry projects specialist for the World Bank, Asia Technical Department, Environment and Natural Resources Division (ASTEN). He works as a member of ASTEN’s urban team and Metropolitan Environmental Improvement Program (MEIP) unit. Mr. Stern develops city-based local level environmental management and community development projects, and intercountry exchange with the six MEIP national offices in Asia; has managed and designed MEIP intercountry workshops; and manages, writes, and edits MEIP publications.

Before becoming a consultant to the Bank, Mr. Stern worked on publications and communications projects for the U.S. maritime industries. He worked for 12 years as a theater administrator and performer (including extensive work in Asia, Europe, the Caribbean, and more than thirty US states). Beside his work as a partner in a theater company he co-founded (Otrabanda), he was responsible for the theater’s grant writing, tour coordination, and press and media relations.

Mr. Stern holds a B.A. in Theater from Antioch College and graduate work in US Foreign Policy at the Johns Hopkins School of Advanced International Studies in Washington, DC.